

BLAST FROM THE PAST

OPCODE FUSION AUDIO PLUG-INS FOR WINDOWS & MAC

BY TIM TULLY (FUSION:FILTER)

AND J. SCOTT HAMLIN (FUSION:VOCODE & FUSION:VINYL)

PRODUCT REVIEWS

If you're feeling the need for a little retro in your soundtracks or audio effects, or if you simply have wide-ranging sound design needs, Opcode's Fusion series of audio plug-ins is guaranteed to send you down memory lane. Fusion:Filter (\$199) is a bank of three audio filters that mimic the voltage-controlled resonant filters found in old-fashioned analog synthesizers (currently popular in electronic dance music). It specializes in filtering, but it also provides distortion and ring modulation, making for a broad palette of sound manipulation possibilities. Fusion:Vocode (\$149) simulates an analog vocoder, popular during the '70s for creating robot voices and heavenly choruses, but capable of a variety of other effects. Fusion:Vinyl (\$99) adds the snap, crackle, and pop of obsolete vinyl disks and also offers highly practical sounds like those coming over a telephone or AM radio.

All three plug-ins provide remarkably straightforward user interfaces and let you save and load your own presets. In addition, they offer a real-time preview that lets you hear the results of any adjustment as you edit. Of course, the preview's responsiveness depends on the speed of your CPU, how much RAM is available, and the size of the audio file. Small audio files tend to preview very responsively, even with multiple large applications open, while clips of one minute or

more can take 10 to 15 seconds to begin playing.

The Fusion series is compatible with both Pentium-based Windows machines and Power Macs. All three plug-ins are available in a variety of audio plug-in formats, ensuring compatibility with virtually every major audio development environment (see spec box, page 67).

Fusion:Filter was tested on a 200MHz Power Mac 9500 with 164MB RAM. Fusion:Vocode and Fusion:Vinyl were tested on a 200MHz Pentium with 128MB RAM.

Fusion:Filter

Filtering is a basic function in audio production, sound design, and sound synthesis. In essence, a filter removes part of the frequency spectrum. A low-pass filter removes the top part, high-pass removes the bottom part, band-pass removes the top and bottom, and notch removes a section from the middle. The filter's cutoff frequency is the point at which the filter starts to do its work. Band-pass and notch filters have two cutoffs, and the distance between them (the bandwidth) can be adjusted. The word *resonance* is used to describe an emphasis at the cutoff. Without resonance, moving the cutoff over time (modulating it using an envelope or low-frequency oscillator) makes the sound progressively duller or brighter. With resonance, moving the cutoff creates a familiar synthesizer effect akin to a wah-wah sweep.

Fusion:Filter (Fig. 1) comprises three filters that offer all these capabilities. Alternatively, they can provide EQ (boost), distortion, or ring modulation with sawtooth, sine, square, and triangle wave shapes. The thing that makes it really scream, though, is the ability



Figure 1. Fusion:Filter provides three analog-style resonant filters that can be connected in parallel or series. They can be modulated over time for rapid or slowly evolving effects that can be subtle or surprising.

to program incredibly rapid changes to each filter's cutoff and resonance (and, for the band-pass and notch filters, bandwidth). Modulation sources, each with editable shape, attack ramp, and phase, include a user-drawn envelope, a rhythmic sequence, and a low-frequency oscillator (LFO). The LFO offers a choice of four wave-shapes whose frequencies can be set between 0.1Hz and 30Hz or synchronized to the tempo of a music loop. The ability to modulate the parameters of three filters independently and simultaneously makes it possible to change the



Figure 2. Fusion:Vocode allows you to impress one audio clip (such as a human voice) on another (such as a synthesized chorus) to generate vintage vocoder effects such as the classic robot voice.

OPCODE FUSION:FILTER

Rating



Pros

Three simultaneous independent, analog-style resonant audio filters that can also provide distortion, ring modulation, and equalization. Envelope, LFO, and rhythmic control of filter parameters. Broad multi-application, cross-platform support.

Cons

Most expensive of the Fusion line.

Bottom Line

Fusion:Filter works the way you've always wanted an audio filter to work: fast and programmable. The additional effects are icing on the cake.

OPCODE FUSION:VOCODE

Rating



Pros

Any audio file can be used as modulator or carrier. Lo Fi option speeds up processing and previewing. Useful presets. Broad multi-application, cross-platform support.

Cons

Doesn't take advantage of digital technology to extend vocoder functionality.

Bottom Line

Fusion:Vocode brings classic analog vocoder effects to the desktop.

character of soundfiles in an astonishing variety of ways.

In Fusion:Filter, Opcode has created an excellent sound-design tool suitable for subtle touch-up work or giving workaday sounds an unexpected character. It's also a great way to wring interesting variations from a single soundfile so that it can be used in distinctive contexts, such as various states of a button or various levels of a game.

Fusion:Vocode

Anyone familiar with a classic vocoder (such as the Korg VC10) will feel at home with Fusion:Vocode (Fig. 2). Vocoding imposes the harmonic characteristics of a modulator audio element, such as a spoken voice, onto a carrier audio element, such as synthesized violins. Essentially, the output is a filtered version of the carrier.

The active audio clip in your host audio editor (in this case, Sound Forge) serves as the modulator. For a carrier, you can either choose from Fusion:Vocode's built-in sounds or import an audio file in WAV or AIFF format. Level controls are provided for the carrier, modulator, and overall output. A unique Emphasis control adjusts the resonance of the vocoded effect,

OPCODE FUSION:VINYL

Rating



Pros

Wide range of practical, predictable effects. Variety of straightforward controls. Broad multi-application, cross-platform support.

Cons

Inadequate documentation.

Bottom Line

Fusion:Vinyl is a great way to add scratchy, dirty, and worn characteristics to pristine sampled audio.



Figure 3. You can add vinyl record effects such as pops, dust, noise, and warping to any audio clip using Fusion:Vinyl. This plug-in includes useful presets that simulate the sound of an AM radio and a telephone.

effectively intensifying it. Depth controls the depth of modulation and lets you mix the carrier into the final output. Mix lets you mix the modulator into the final output. You can equalize the whole thing using a five-band graphic EQ. An onscreen 11-octave musical keyboard lets you play individual notes or chords.

Fusion:Vocode also features a Lo Fi option that decreases the fidelity of the vocoding effect by processing the audio files at a lower sample rate, augmenting the retro feel of the effect. Because this control reduces processing overhead, it enhances the responsiveness of the GUI as a whole.

While Opcode is to be commended for providing a digital vocoder, they could have taken it a little further. Although they've raised the number of frequency bands analyzed by the vocoder from the usual 8 or 16 to 1,000, the results aren't significantly different or better. You can easily get conventional vocoder effects out of Fusion:Vocode, but in the digital age, it's not enough merely to emulate the past. With the technology at Opcode's disposal, I had expected them to extend the vocoder's capabilities in a manner similar to the way Photoshop extended the capabilities of the traditional darkroom.

Fusion:Vinyl

The mission of Fusion:Vinyl (Fig. 3) is to blend in scratches, pops, fuzziness, and warping. The plug-in ships with presets such as AM Radio, Sandbox (very grainy), Wax Cylinder (old vinyl), and Left in Trunk (warped). Controls are divided into two groups that simulate vinyl condition and fidelity. Condition controls include the amount of Dirt, Static, Hiss, Wear, Scratches, Warp, and Fade Out. Fidelity controls let you select the frequency that will be affected by the controls and to adjust Compression, Turntable Speed, and Rumble. The software also provides Depth and output Level controls.

All in all, Fusion:Vinyl is very satisfying — not to mention affordable — with plentiful controls and a useful, predictable range of results. 🐾

OPCODE FUSION PLUG-INS

Description

Cross-platform plug-in audio effects for analog-style voltage-controlled filtering, vocoding, and adding old-fashioned vinyl quality degradation.

System Requirements

Windows: Pentium PC with Windows 95/NT. DirectX plug-in format supported by Cakewalk 6.0, Emagic Logic Audio, Sonic Foundry Sound Forge 4.0d, and Steinberg Wavelab 2.0. **Macintosh:** Power Mac with MacOS 7. Adobe Premiere format supported by Opcode Vision and Studio Vision Pro, BIAS Peak, Macromedia Deck II, and MOTU Digital Performer. Audiosuite format supported by Digidesign Pro Tools 4.0.

File Format Support

WAV, AIFF, SDII.

Suggested Retail Prices

Fusion:Filter \$199. Fusion:Vocode \$149 (\$495 Digidesign TDM plug-in format). Fusion:Vinyl \$99.

Contact

Opcode, 3950 Fabian Way, Ste. 100, Palo Alto, CA. 94303; vox 650.856.3333; fax 650.856.0777; Web www.opcode.com.

Reader Service Online:

www.interactivitymag.com/service

ABOUT THE AUTHORS

Tim Tully is a partner in Wild Dog Productions, which produces music and video for corporate communications. He can be reached at timtully@earthlink.net.

J. Scott Hamlin (www.eyeland.com) is a partner/producer at Pure Imagination, Inc. He is the author of *Designing with Animation* (O'Reilly Press), *Photoshop Web Techniques* (New Riders), and *Interface Design with Photoshop* (New Riders).